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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/752,007 | 01/07/2004 | Naohito Shiga | 009523-0307495 | 3636 |

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| EXAMINER |
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ZIMMER, MARC S

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| ART UNIT | PAPER NUMBER |
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1712

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/752,007

Applicant(s)

SHIGA, NAOHITO

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/17/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Objections

Claim 4 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, claim 4 not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At issue is Applicant's statement that the cementing layer is "made of" polysilane. Although there appears to be conflicting subject matter in the Specification, it would seem more accurate to say that the cementing layer is derived from a polysilane. Indeed, Applicant apparently does not contemplate an embodiment wherein the only step required to establish a bonding interaction is the mating of two substrates with a layer of solvent-diluted polysilane as an interlayer followed by removal of the solvent. This is an important distinction because, whereas it is predicted that the aforementioned manipulation would not result in a chemical change in the polysilane, the UV treatment and heating step carried out at 250-300° C, which appear to be essential operations in the preparation of the claimed composite, do in fact induce chemical change in the polysilane layer. (See the first paragraph on page 8 and the last full paragraph on page

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9 of the Specification wherein it is reported that the UV treatment and heating steps result in homolytic cleavage/rearrangement of the polymer and oxidation respectively.)

As further evidence supporting the notion that the polysilanes are not, themselves, adhesives for joining inorganic optical materials, e.g. glass, the Examiner cites Stedman, U.S. Patent # 3,449,135 plainly states that polysilanes similar to those presently contemplated do not adhere to glass.

If the Examiner is correct in concluding that the UV treatment and heating step are both crucial to the formation of a robust bond between the substrates, than claim 1 should be substantially changed to reflect that (a) the bonding layer is a derivative of polysilane, and (b) UV treatment and heating in the specified temperature range are the operations performed to bring about the changes in the polysilane that render it an effective adhesive. Of course, if these changes were made, the claim would likely take the form of a product-by-process claim in which case the Examiner would only be responsible for finding an identical product. (That is to say that the prior art composite would not necessarily have to be obtained in the same manner as would be claimed by Applicant, but the Examiner would still have to meet the burden of demonstrating that the interlayer was equivalent.)

While the Examiner did find mention of the utilization of polysilanes as coating materials for "optical" materials, there does not appear to be precedent for using them, or their degradative by-products, as adhesive materials for bonding to inorganic optical surfaces together. See Kan et al, JP 10-096810 A.

Hiraoka et al., U.S. Patent # 5,858,541 is noted for their description of optical devices that are manufactured using polysilane copolymers made from the polycondensation of polysilane bearing hydrolyzable groups and silanes/metal compounds bearing hydrolyzable groups. However, there were no instances in which the copolymers were placed between two materials that could be construed as optical materials nor was it expressly indicated that the copolymers had any role in "cementing" the layers together. (The optical devices were essentially comprised of a substrate on which multiple films were formed, one of which was a film comprising the polysilane copolymer.)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 20, 2006

A handwritten signature in black ink, appearing to read "Marc S. Zimmer".

MARC S. ZIMMER
PRIMARY EXAMINER